

Claims

1. A user interface device for electronic apparatus, the device comprising a keypad having a plurality of keys each arranged to actuate a respective switch so as to provide a first type of user input and integrally disposed impedance sensor so as to provide a second type of user input.

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2. A device according to claim 1, wherein the keypad includes a region provided with said impedance sensor but without a key.

3. A device according to claim 1, wherein said keys are comprised in a keymat.

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4. A device according to claim 3, wherein the impedance sensor is disposed adjacently to the keymat.

5. A device according to claim 3, wherein the keymat and the impedance sensor are coextensive.

✓ 6. A device according to claim 1, wherein the keys comprise silicone rubber.

15 ✓ 7. A device according to claim 1, wherein the keys include a hard coat.

8. A device according to claim 1, wherein the impedance sensor is arranged to detect the presence of a digit.

9. A device according to claim 1, wherein the impedance sensor comprises ²⁰first and ²¹second sensing plates.

20 10. A device according to claim 9, wherein the first sensing plate comprises a first set of ²²electrodes.

11. A device according to claim 10, wherein the electrodes are arranged in non-contiguous stripes.

12. A device according to claim 10, wherein the electrodes are transparent.

13. A device according to claim 10, wherein the electrodes are made from indium-tin-oxide.

14. ²³ A device according to claim 9, wherein the first sensing plate comprises a substrate.

15. A device according to claim 14, wherein the substrate is substantially transparent.

16. A device according to claim 14, wherein the substrate is made from polyethylene terephthalate.

17. A device according to claim 10, wherein the second sensing plate comprises a second set of electrodes.

18. A device according to claim 17, wherein the first and second set of electrodes are spaced apart.

19. A device according to claim 18, wherein a first member of the first set of electrodes and a first member of the second set of electrodes are arranged to have a mutual capacitance.

20. A device according to claim 19, wherein said members are arranged so to allow the mutual capacitance to change when a digit touches the keypad.

21. A device according to claim 1, wherein the impedance sensor is a capacitive sensor.

22. A device according to claim 1, further comprising a light source to illuminate the keypad.

23. A device according to claim 22, wherein the light source is disposed behind the keys.

24. A device according to claim 22, wherein the light source is planar.

25. A device according to claim 22, wherein the light source is an electroluminescent layer.

26. A device according to claim 1 wherein the first type of user input is input of alphanumeric data.

27. A device according to claim 1 wherein the second type of user input is control of a focus on a display of the electronic apparatus.

28. Electronic apparatus incorporating a device according to claim 1.

29. Electronic apparatus according to claim 28, which is portable.

30. A mobile telephone handset incorporating a device according to claim 1.

31. An electronic communicator handset incorporating a device according to claim 1.

32. A portable computer incorporating a device according to claim 1.

33. A method of fabricating a user interface device for electronic apparatus comprising providing a keypad having a plurality of keys each arranged to actuate a respective switch so as to provide a first type of user input and integrally disposing impedence sensor so as to provide a second type of user input.